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Inaugural Thesis
on
Cathartics
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by
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"Unus et alter .... pannus
assuitur" Hor.

Cathartics

Among the subjects which are presented to the notice of the Physiologist, not the least curious or interesting are the organs by which are prepared for its entrance into their systems, what may be neceſsary for the growth and preservation of organized bodies. One of the characteristic differences in the constitution of the two great Kingdoms of Organized Creation, the Animal, and the Vegetable, is the situation and structure of their digestive organs.

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-ted for entrance into those vessels by which nutrition is performed, and to be subservient to that process.

But in animals, the digestive organs are situated in the interior of their bodies. The food which is introduced into them ~~does~~ does not consist solely of what is capable of affording nutrition, but there is combined with it other matter which is not. The portion which is, after being properly elaborated, is taken up and conveyed into the general circulation by the appropriate vessels, while the other portion is rejected. But as the accumulation of the rejected portion within their bodies would materially interfere with the natural actions of animals, it is necessary that there should be some apparatus for its removal. We accordingly find an Alvine Canal pro-

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vided for the purpose in most Animals In the leech, however, and some other of the lower classes, the same channel is said to afford this outlet, which serves for the reception of food.

In Man, the useless part of the food is removed by the intestines, which are that part of the Alimentary Canal, which extends from the pylorus to the anus. They serve besides other important purposes in the animal economy. In them is performed an important part of the function of digestion. Partly to assist in the above processes, and partly to remove from the blood matters, which having served their purposes in the body, have become effete; various fluids are poured into the intestines. These are, the bile, the secretion of the pancreas, serum, and mucus.

The intestinal tube is formed principally of three coats, differing in structure according to the offices they were intended to perform. The internal one is called a mucous membrane, from its surface being illinated by the mucus coming from the numerous glands and follicles entering into its structure. Its surface is thickly studded with minute projections denominated villi. Each of these has entering into its structure, the commencement of a veſsel for receiving and conveying the supply to the blood which it derives from the food, and the vessel or vessels which exhale serum. The ducts of the liver and spleen are lined to their minutest ramifications in those organs, by prolongations of this membrane. Exterior to this coat there is a muscular structure, the fibres of which wind

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in a spiral manner around the intestines forming a complete coat. The above are the structures which are chiefly concerned in the operation of Cathartics, the external coat only being an envelope to the organs, separating and protecting them from impreſsions of contiguous parts.

The Alvine Evacuations consist not only of the refuse of what is taken in as aliment, but in part of the fluids discharged into the alimentary canal. Those medicines which tend, under ordinary circumstances, to promote or increase these evacuations, are denominated Cathartics. Under some particular circumstances articles, not included in this claſs, and which ordinarily have quite a diverse effect, may have this tendency.

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Cathartics operate, perhaps it will not be altogether improper briefly to notice the manner in which the ingesta are moved along and expelled. The peristaltic motion is the means by which the contents of the intestines are propelled through them. This motion consists in the alternate contraction and dilatation of different portions of the tube. Of it the muscular coat is the agent; it being a property of these hollow muscles that when one section of them contracts, the section immediately below relaxes, enlarging the capacity of the tube in the latter part; the effect of which will obviously be the propulsion of its contents. The peristaltic motion of the intestines being a natural action of them, intended for the propulsion of their contents what ever distends them will tend to excite it.

But the secretion of the liver whatever other properties it may have, or purposes it may serve, is justly supposed to possess the property of exciting the peristaltic motion. This opinion is drawn from the effect the suppressed or vitiated secretion of bile have been observed to have on the alvine evacuations; the former diminishing, the latter either increasing or diminishing them, according to the change in its qualities that takes place. The bile of inferior animals is well known to have considerable power in relieving a torpid condition of the bowels. So little is known of the use of the pancreas that it would be difficult to determine whether it does or does not exert any influence of this kind by its secretion

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till the patient passed into the [illegible] will however, by attenuating their contents (although this is not their sole object,) cause them to offer less resistence to the peristaltic motion. Were this not the case, as the absorbents are constantly active, and what they take up is in a liquid form, the ingesta would become impacted in the intestines, long ere they had passed through their lengthened tract. Should a part of the fluids dischaged into the intestines, after undergoing some change be again taken up it would not prevent their having this effect. The quantity of serum which is exhaled is supposed to be very considerable, and like other excretions, is probably intended to separate from the blood parts which require to be removed from the body, in consequence of the constant change which is taking place

in its constituent molecules. The mucus protects the membrane whose surface it illinates from irritation, and diminishes resistence to the motion of the ingesta from attrition.

The ingesta are thus carried through the course of the intestines by actions not under the control of the will. But as the gradual and uncontrolled evacuation of the feces would be very annoying, they are accumulated in the rectum their further progress being opposed by the sphincter muscle at the orifice of the canal. Their expulsion is then accomplished, by organs under the command of the will; as the abdominal muscles and diaphragm. The latter acts indirectly, being kept in a fixed state by the closure of the glottis which enables the contractions of the former to

have effect, by preventing the abdominal viscera from encroaching upon the cavity of the thorax. The sphincter muscle is also relaxed; and the resistence to the contraction of the rectum being removed, the expulsion of the feces is accomplished

Cathartics operate, by increasing all those actions, by which the ingesta are propelled, or which favour their propulsion. They all increase the peristaltic motion; and most if not all of them augment the secretions poured into the intestinal tube. Cullen says no article produces the latter effect, that has not likewise the property of increasing the peristaltic motion. No fact is known which disproves his opinion; though anything which would augment the tenuity of the ingesta, would without any stimulation to the muscular coat ~~increase~~

quicken the motion of the bowels. It is however possible, that cathartics augment the exhalation upon the internal surface of the intestines much less, than the appearance of the evacuations might lead us to suppose. Part of the fluid exhaled is usually, (after undergoing some changes) is perhaps again taken up by the absorbents, which the action of cathartics may prevent from taking place, by the rapidity with which they cause the ingesta to be moved along. The operation of cathartics upon the excernents, is not confined to those entering into the structure of the intestines, but extends to the collatitious viscera. The power in many of them of augmenting and changing the bilious secretion is well known; the principal remedies addreſsed to the liver, when its functions are

deranged, being derived from this class of medicines. If the secretion of the liver be the natural stimulus to the intestines, it is not extraordinary that articles which have a control over it, should in consequence thereof, have their influence on the alvine discharges increased.

The influence which some cathartics have upon the liver, has been accounted for, by the association of its function with that of the intestines, and by the lining membrane of the latter being continued to it through its ducts

Different cathartics possess different powers, in relation to the modes of operation mentioned above. Some of them have been characterized as exerting their influence more particularly upon the muscular fibres of the intestines, others

upon the secreting apparatus. Among the latter, there is a diversity as to the discharges they produce, some bilious, some serous; giving rise to the division into Hydragogues and Cholagogues.

There is also some diversity in regard to the part of the intestinal canal, on which different articles operate; the influence of some seeming to be confined to one portion, of others, to reach through its whole extent.

These peculiarities demand attention in practice, but do not require more particular notice on the present occasion.

In producing their effects, cathartics undoubtedly increase the vigour of the circulation, (for otherwise the action of no organ can be augmented,) in the

organs concerned. Yet their effects can not result solely in consequence of this influence on the sanguiferous vessels of the parts; for then the operation of all cathartics would be similar, differing only in degree. Why those actions which follow the application of cathartics to the surface of the intestines ~~which~~ should take place, it is impossible to explain. Nor is this difficulty confined to the articles in question; for it is impossible to explain why stimuli to any organ should call it into increased action. All that can be done is to note the attending phenomena, and mark the effects. It does really seem as if our ideas of causes and effects are little else than of antecedents and sequents. In defining cathartics we limited them

to articles whose tendency is, in ordinary circumstances, to promote the alvine evacuations; because under some particular circumstances articles having no claim to be ranked in the class, prove more efficient to that purpose. Thus when those evacuations are interrupted in consequence of a morbid condition, which other means are better calculated to relieve than cathartics, such means will also be most likely to restore the evacuations. As familiar instances of this may be cited, inflammation of the bowels, in which blood-letting; and spasm, in which opium. is the surest and at times indispensable means of overcoming the obstruction

When there is an accumulation of fecal matter in the rectum, a sudden and violent impression made upon some remote

part; as for instance by dashing cold water on the feet; will often call into successful action the powers necessary for its expulsion. In the same circumstances mechanical means are had recourse to.

In speaking of the remedial effects of cathartics, the more prominent alone will be mentioned. To enumerate the diseases in which they may be advantageously used, or even those arising from, or depending on, a morbid condition of the alimentary canal in which they are more particularly required, would protract the subject beyond the proper limits: The enumeration of the former would include nearly the whole circle of diseases, and the catalogue of the latter would not be brief

The first and most obvious effect of Ca=

thartics will be, the evacuation of whatever may, at the time, be contained in the intestines. This will be required whenever there is any undue accumulation of the ingesta from a torpid condition of the bowels. This torpor may result from a fault in the muscular coat itself, or want of stimulus to it, in consequence of a deficient, or vitiated secretion of bile. No less incompatible with health, than an improper quantity, is the improper quality of the ingesta, — whether arising from the noxious nature of matters taken, or from the vitiated secretion of bile, serum, or mucus, — and equally requires the use of cathartics. Nor is the removal of offensive matter all that is accomplished in those cases where the secreting organs are in fault, but, by a second effect of cathartics; viz,

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the altering of their secretions, and the restoring them when suspended; its reproduction is prevented. But independently of the products of the deranged function of the secernents connected with the intestines, the derangement itself is a disease, and can not continue long, particularly if it be the liver that is affected; without the system generally becoming involved; and for its relief recourse is had to some ~~one~~ article of the class of which we are speaking. Even diarrhoea depending on vitiated secretions is at times managed by some of the cathartics

The next effect to be mentioned is that of reducing and keeping down vascular action. In consequence of the increase of some of the secretions, all of which are derived from the general circulation, cathar=

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-ties must abstract a considerable portion of fluid from the sanguiferous vessels, and thus diminish their action. From the augmented discharge of serum which hydragogues occasion, it would not be irrational to suppose, that they affected not only the quantity of the blood, but also, the relative proportion of its constituents, diminishing the proportion of serum. In this way their agency in removing serous accumulations has been explained by some; who assume that there is a certain appetency in the sanguineous system, not only for the quantity, but also, for the due relative proportion of the constituent parts of its circulating fluid. There being a deficiency of serum, they suppose the absorbents are called upon to restore the deficiency, and thus remove the accu-

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=mulations from cavities. It is universally admitted that cathartics by their influence on the sanguineous system, tend to lessen serous accumulations, either in the way mentioned or by lessening effusion, or in both ways. By the rapidity with which they may be made to cause the food taken in to pass through the alimentary canal, thus affording less time to the lacteals to act upon it, cathartics will prevent repletion. It will however be admitted that the end would be more efficiently attained by a regulated regimen.

Some distinguished Medical Men think cathartics have been looked upon as depletories too much: that from the fear of inducing debility their use has been abstained from, where required from other indications they are calculated to fulfil, and

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thus, more than counterbalance the danger from any debility they could possibly induce

The last effect of cathartics which shall be mentioned, is that of revulsion. During their action blood is determined to the abdominal viscera in unusual quantities. This disturbance in the distribution of the general circulation must diminish the determination to, and action in, the other organs of the body. When we consider the copious vascular supply which is afforded to the abdominal viscera, the influence they may exercise in this way will not seem inconsiderable

Most of the benefit derived from cathartics, as such, will probably result from their producing some of the effects enumerated. Many of them combine with the property

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which places them in this class, some other, which must be attended to in selecting articles from the class, according to the circumstances of the case in which they are to be used

It would be unnecessary to attempt to determine the relative importance of this, as compared with other classes of medicinal articles: let it suffice, that the use of cathartics could scarcely be dispsed with in the practice of medicine.